What IS CLAIMED IS

~~claims~~

SUB A1

1. Polymerase chimera composed of functional amino acid fragments of at least two different polymerases, wherein the functional amino acid fragments are active in the polymerase chimera and the domain having polymerase activity is derived from the first polymerase and the domain having 3'-5' exonuclease activity is derived from the second polymerase and wherein the amino acid sequence of the polymerase chimera essentially corresponds to SEQ ID NO:8.

2. Polymerase chimera composed of functional amino acid fragments of at least two different polymerases, wherein the functional amino acid fragments are active in the polymerase chimera and the domain having polymerase activity is derived from the first polymerase and the domain having 3'-5' exonuclease activity is derived from the second polymerase and wherein the amino acid sequence of the polymerase chimera essentially corresponds to SEQ ID NO:10.

3. Polymerase chimera composed of functional amino acid fragments of at least two different polymerases, wherein the functional amino acid fragments are active in the polymerase chimera and the domain having polymerase activity is derived from the first polymerase and the domain having 3'-5' exonuclease activity is derived from the second polymerase and wherein the amino acid sequence of the polymerase chimera essentially corresponds to SEQ ID NO:12.

4. Polymerase chimera as claimed in one of the claims 1-3, wherein the chimera additionally has RT activity.

SUB A1 CONT.

5. Polymerase chimera as claimed in one of the claims 1-4, wherein histine tags have been incorporated into the amino acid sequence of the chimera.

6. DNA sequence of a polymerase chimera as claimed in one of the claims 1-5.

7. DNA sequence of a polymerase chimera according to SEQ ID NO.2.

8. DNA sequence of a polymerase chimera according to SEQ ID NO.4.

9. DNA sequence of a polymerase chimera according to SEQ ID NO.6.

10. Vector containing a DNA sequence as claimed in claims 6-9.

11. Transformed cell which contains the vector as claimed in claim 10.

12. Process for the production of the polymerase chimeras as claimed in one of the claims 1-5, wherein the process comprises the following steps:

- designing variants with the aid of amino acid sequence alignments, of 3D models or with the aid of experimentally determined 3D structures

SUB A' CONT.

- production of domain exchange variants by genetic engineering
- ligating the DNA fragments into starting vectors
- expression of the chimeras in a host which was transformed by vectors carrying DNA fragments
- purifying the expressed polymerase chimeras.

13. Use of the polymerase chimeras as claimed in one of the claims 1-5 for PCR.

14. Use of the polymerase chimeras as claimed in one of the claims 1-5 to sequence DNA fragments.

15. Use of the polymerase chimeras as claimed in one of the claims 1-5 for RT-PCR starting with an RNA template.

16. Kit containing a polymerase chimera as claimed in one of the claims 1-5.